

**ABSTRACT**

**A METHOD AND APPARATUS FOR DETERMINING THE MASS  
FLOW THROUGH AN ENGINE**

A method for determining the total mass flow through an engine (10) comprises measuring (32) the fuel flow to the engine (10) and measuring the concentration of carbon dioxide in the gases exhausted (22) from the engine (10). The concentration of carbon dioxide is measured by detecting the infrared radiation absorption spectrum of carbon dioxide using a laser (38) and a detector (46). The method comprises determining (48) the air to fuel ratio in the engine (10) from the fuel flow and the concentration of carbon dioxide. The method comprises determining (48) the air mass flow through the engine (10) from the air to fuel ratio and calculating (48) the total air and fuel mass flow through the engine (10) by adding the air mass flow through the engine (10) to the fuel mass flow to the engine (10).

(Figure 1,2)